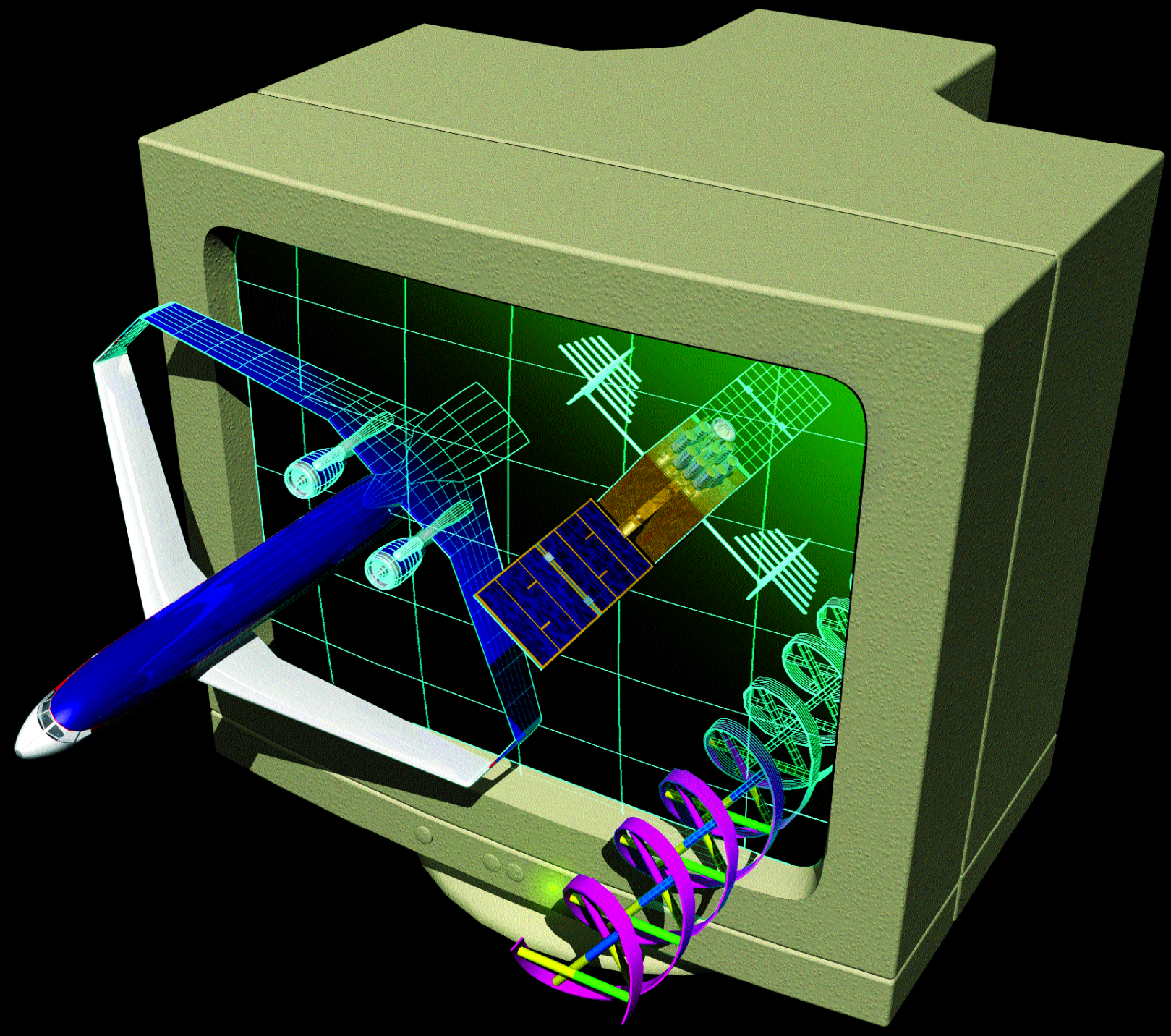


As we enter an era many refer to as the "New Economy," one constant is the value and applicability of the research and development activities taking place at NASA. Technology developed for aerospace applications can often be beneficially applied in other industries. Whether it is NASA working in tandem with private industry, or the commercial sector turning to NASA for technological assistance, many of these aerospace technologies have found their way into new products and services. This graphic portrays the potential of commercializing NASA-developed technology into a number of applications, such as advanced aviation, medicine, and space communications.

Goal Four: Commercialize Technology

NASA's goal is to extend the commercial application of NASA technology for economic benefit and improved quality of life.

Although NASA technology benefits the aerospace industry directly, the creative application of NASA's advanced technology to disparate design and development challenges has made numerous contributions to other areas such as the environment, surface transportation, and medicine. NASA achieves this by partnering with both aerospace and non-aerospace industry as well as academia. These partnerships involve the full range of NASA's assets: technological expertise, new technologies, and research facilities. The NASA Commercial Technology Network (NCTN) is a key mechanism for enabling technology transfer and commercialization. This network consists of the NASA-affiliated organizations across the U.S. that provide unique expertise and services to U.S. enterprises, facilitating the transfer, development, and commercialization of NASA-sponsored technology. NASA will also implement activities that support internal technology transfer, to share new technologies and innovations across all NASA programs and projects as well as with other federal agencies. An effective internal and external transfer effort augments our economy, benefits the public, and fosters the leveraging of technology across NASA programs. NASA will continue to improve its technology commercialization and outreach programs to ensure the widest application of NASA-developed technology to benefit the Nation.

Goal Four: Commercialize Technology

Under a NASA Small Business Innovation Research (SBIR) contract from the Jet Propulsion Laboratory, AESOP® (Automated Endoscopic System for Optimal Positioning) was developed by Computer Motion, Inc., in Santa Barbara, California. NASA hopes to use the robotic arm technology to service satellites, inspect payloads on the Space Shuttle, and to perform space repair missions that require exact and precise movements that exceed human dexterity. Here, doctors use AESOP® to control the motion of a slender camera inserted into a small incision in the patient undergoing endoscopic surgery. This voice-controlled positioning system eliminates the need for surgical staff to hold the camera in place, and provides an absolutely steady picture during minimally invasive surgeries.

Outcomes

A successful effort would have the following outcomes:

- Prompt identification and capture of new NASA technologies and innovations.
- Proactive development and implementation of commercial technology partnerships.
- Partnerships that result in economic benefits, quality-of-life improvements, and/or the sharing of technological innovations between NASA programs or with other federal agencies.

Key Strategy and Partnership Issues

Key to this NASA goal is early identification of those NASA activities with potential for technology transfer and commercialization, coupled with development of a sound technology transfer and commercialization plan. NASA will continue striving to implement and maintain a partnership portfolio with a value equivalent to from 10 to 20 percent of its annual R&D resources. The responsibility for this plan is shared jointly by each NASA activity manager and the Commercial Technology Offices located at each NASA center. Each NASA center has the flexibility to tailor the specific aspects of this responsibility on an activity-by-activity basis.

Glossary of Terms

Glossary of Terms

airframe. Assembled structure of an aircraft, together with the system components that form an integral part of the structure and influence aerodynamics, control, strength, integrity, or shape.

ATM. Air Traffic Management.

available seat miles (asm). A measure of aviation system capacity. It is the total vehicle miles flown on an annual basis by the commercial fleet, multiplied by the number of seats in those vehicles.

combustor. The jet engine component that ignites and burns the fuel-air mixture.

Day Night Level. Community noise impact measured at a specific airport location, averaged over a 24-hour period.

DoD. Department of Defense.

DoE. Department of Energy.

EPA. Environmental Protection Agency.

EPNdB. Effective Perceived Noise in Decibels.

FAA. Federal Aviation Administration.

Free Flight architecture. Free Flight is an innovative concept designed to enhance the safety and efficiency of the National Airspace System (NAS). The concept moves the NAS from a centralized command-and-control system between pilots and air traffic controllers to a distributed system that allows pilots, whenever practical, to choose their own route and file a flight plan that follows the most efficient and economical route.

GDP. Gross Domestic Product.

general aviation aircraft. Aircraft used for regional airline service, business transportation, recreation, specialized uses (such as ambulances and agricultural spraying), and pilot training.

ICAO. International Civil Aviation Organization.

intermodal. Having the ability to move from one element of the transportation network to another. The three main modes of transportation are surface, air, and water. Within each mode are additional elements that, ideally, would interconnect to allow for a widely distributed transportation system.

IPCC. Intergovernmental Panel on Climate Change.

ISTP. Integrated Space Transportation Plan.

IVHM. Integrated Vehicle Health Management.

LEO. Low-Earth Orbit.

LTO. Landing/Take-Off. metrics. Quantifiable indicators that can be used as a measure of performance. The indicators are relevant to the system or technology and are stable over time.

NAS. National Airspace System.

NASA. National Aeronautics and Space Administration.

National Airspace System (NAS). A complex collection of the systems, procedures, facilities, aircraft, and people that support all aircraft operations in the United States. As directed by the FAA, NAS represents the overall environment for the safe operation of aircraft.

NCTN. NASA Commercial Technology Network.

Glossary of Terms

NIST. National Institute for Standards and Technology.

NOAA. National Oceanic and Atmospheric Administration.

NRO. National Reconnaissance Office.

NSF. National Science Foundation.
payload. The satellite, instrument package, or equipment carried into space by a launch vehicle.

R&D. Research and Development.

RLV. Reusable Launch Vehicle.

RPM. Revenue Passenger Miles.

SATS. Small Aircraft Transportation System.

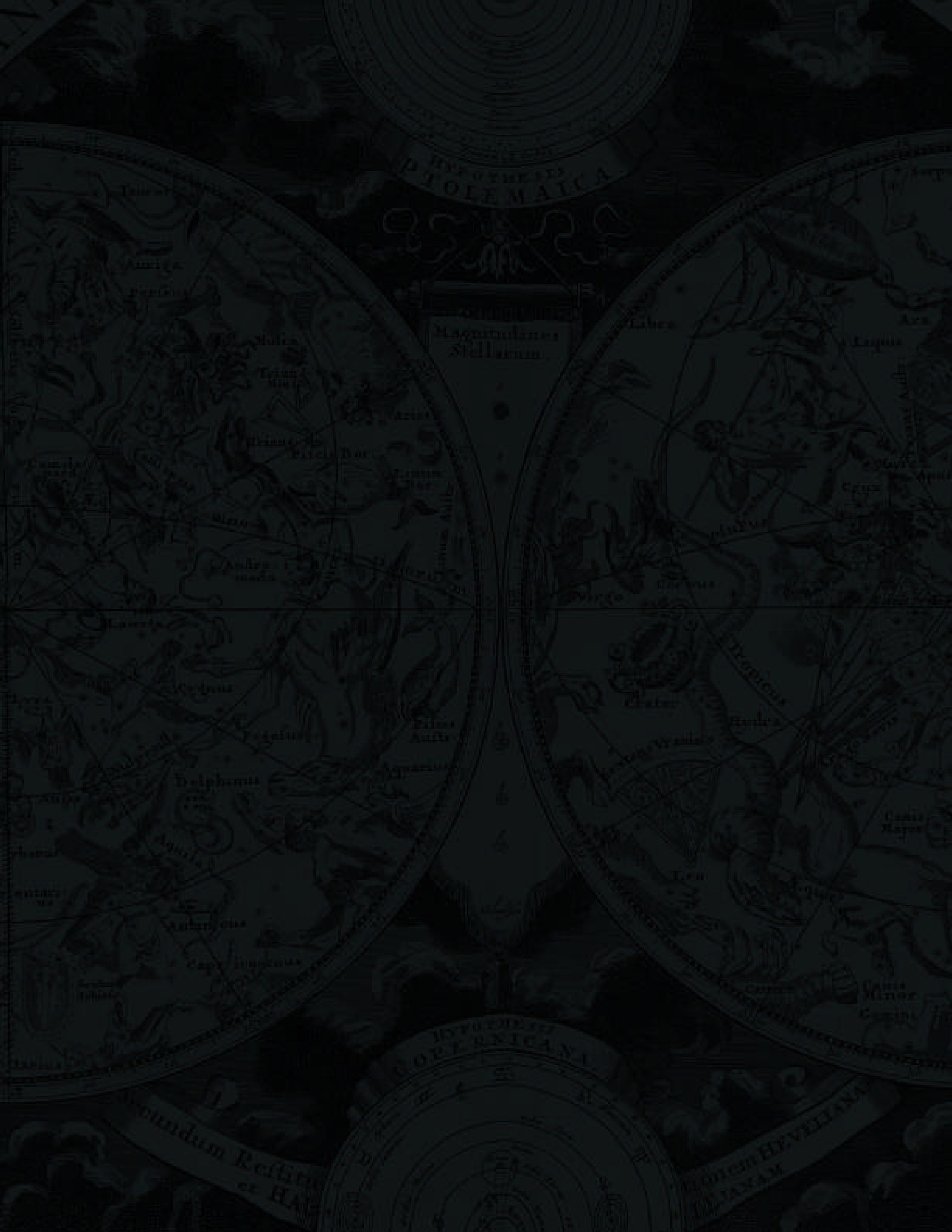
SHARP. Slender Hypersonic Aerothermodynamic Research Probe.

Stage 2, Stage 3, and Stage 4. The noise stringency standards for jet-powered aircraft, set by the FAA for aircraft operating in U.S. airspace. These standards are negotiated in an international context through the International Civil Aviation Organization (ICAO). Stage 2 compliant aircraft completed their operational phase-out in December 2000. Stage 3 standards are more stringent and are now in effect throughout the fleet. Stage 4 are the standards that are currently being debated by the ICAO.

STAS. Space Transportation Architecture Studies.

thrusts. Areas of research identified as having a potentially significant impact on an objective. The thrusts are a collection of technology disciplines, or smaller research initiatives, whose primary results could be leveraged to maximize their contributions toward the stated objective. Secondary benefits to other objectives are also likely.

tiltrotor. An aircraft that delivers lift from a system of rotating airfoils in the vertical mode. For efficient travel, the rotors are moved to the horizontal mode to operate like a turboprop aircraft.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National Aeronautics and
Space Administration

Aerospace Technology Enterprise

Code R

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